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ABSTRACT

The New Jersey College Basic Skills Placement Test (NJCBSPT) was instituted in 1978 as a proficiency examination designed to measure the reading, writing, and mathematics skills of students entering college. In spring and summer 1982, 51,135 students at New Jersey's state and county colleges and at 10 independent colleges took the NJCBSPT. Of these students, 27% appeared to be proficient in verbal skills, 32% in computation skills, and 11% in elementary algebra. Among the group of 31,964 students who graduated from high school in spring 1982, similarly small percentages of students demonstrated basic skills proficiency. Further, there has been no meaningful change in the proficiency level of entering students in the 5 years that the testing program has been in place. Detailed analysis of the mathematics results indicates that very few students have a minimal understanding of basic mathematics. Among the group of 6,898 recent high school graduates who had completed a traditional college preparatory program, fewer than 4% appeared to be proficient in elementary algebra. Based upon an analysis of the results of the NJCBSPT for the past 5 years, the New Jersey Basic Skills council made a number of recommendations, including that the development of critical thinking and problem-solving skills be the underlying goal of education, and that increased emphasis be placed on reading and writing. Appendices include a description of the NJCBSPT, sample mean scores, sample test items and essays, and student data. (HB)

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ED232716

Report to the Board of Higher Education on Results of the New Jersey College Basic Skills Placement Testing and Recommendations on Instruction and Curriculum

May 20, 1982 - September 23, 1982

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SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Proficiency of Entering College Freshmen

In 1982, a relatively small proportion of the students entering college in New Jersey were able to demonstrate proficiency in basic skills. Of the 51,135 students tested at all the public and 10 independent colleges and universities in the Fall of 1982:

- 27% appeared to be proficient in verbal skills
- 32% appeared to be proficient in computation; and
- 11% appeared to be proficient in elementary algebra.

The remaining students either lacked proficiency or lacked proficiency in some areas of reading, writing or mathematics.

Further, there has been no meaningful change in the proficiency level of the entering students in the five years that the testing program has been in place.

Recent High School Graduates

Of all the students tested in 1982, 63% (N=31,964) graduated from high school in the Spring of 1982. Among this group too, relatively small percentages of students demonstrated proficiency in the basic skills:

- 29% appeared to be proficient in verbal skills;
- 38% appeared to be proficient in computation; and
- 14% appeared to be proficient in elementary algebra.

Once again, there has been no meaningful change in these percentages since the testing program began in 1978.

Continuing Weakness in Mathematics

Detailed analysis of the mathematics results indicates that very few students have even a minimal understanding of basic mathematics. For example, among the group of 6,898 recent high school graduates (excluding all students who indicated that English was not their best language) who completed the traditional college preparatory program (Algebra I, Geometry, and Algebra II):

- fewer than 4% appeared to be proficient in elementary (ninth grade) algebra. In addition, 50% of this same group of college prep students recently graduated from high school could not correctly answer half of the 30 elementary algebra problems presented.

- over a third (36%) could not successfully answer at least 20 out of 30 sixth grade arithmetic problems (i.e., they fell into the "lack proficiency" category in computation).

Conclusions

Analysis of the NJCBSPT results over the five years of the program lead to the following conclusions:

Verbal

1. Many students have difficulty in understanding and drawing inferences from what they read.

2. Many students have difficulty in writing, especially in writing expository essays. They tend to find writing a narrative essay, which requires a person to tell a story or relate a personal experience, easier than writing an expository essay where a person must take a position and logically present and defend it in an organized essay using examples that support the position.*

3. Many students have difficulty using standard English grammar.

4. Many students have difficulty with tasks requiring the use of critical thinking skills.

Mathematics

1. Use of mathematical operations causes considerable difficulty when students do not understand their proper application. Students who can perform simple rote operations seem not to be able to decide how and when they must be applied in a practical situation.

2. Students can solve certain types of computation problems if a given problem is stated in one form but not if the same problem is stated in another form. We think that this is due primarily to an inability to reason algebraically.

3. Students who can perform separately each of two simple operations have considerable difficulty successfully solving a problem requiring the combination of these simple operations.

4. Students have much more difficulty with problems involving letters than with similar problems involving numbers.

*See Appendix F for sample essays

5. Students' performance on word problems does not correlate well with their performance on other types of algebra problems. This is true even when no solution is required; i.e., when the problem is simply to translate a verbal statement into mathematical form. In such cases, we think that the difficulty lies not so much with the mathematics as with precise verbal analysis, extraction of the logical structure of the problem, and translation into symbolic form.

Recommendations

The Basic Skills Council has analyzed the results of the NJCBSPT for the past five years. In addition, the Council has collected data and information on the remedial efforts of every public college in the State. On the basis of these data, as well as the knowledge and expertise of the faculty members who sit on both the Council and its Advisory Committees, a number of general recommendations have been made.

1. The Council recommends that the development of critical thinking and problem solving skills ought to be the underlying goal of education.

2. Individual operations, processes, and facts should not be taught in isolation but rather within a broad conceptual framework. The objective of instruction should be to impart an understanding of the order inherent in the subject.

3. High standards should be embraced by all educational institutions. Teachers should not be satisfied with minimal competency; all students should be challenged to excel to the limits of their abilities. Proficiency in the basic skills should be expected of all students.

4. Students' progress should be evaluated frequently. Students who have not achieved mastery of basic skills at one level should not be moved to the next level until requisite proficiencies can be demonstrated. No student deficient in basic skills should receive a diploma or a degree.

5. Students at all levels should be encouraged to do much more reading and writing. It is not sufficient for English teachers alone to emphasize reading and writing; these skills should be reinforced by teachers in all academic disciplines. Reading and writing should be taught in an integrated fashion throughout the curriculum rather than as isolated subjects.

6. Emphasis should be placed on helping students to understand what they are reading by requiring that they critically analyze and evaluate the material they read. A corollary of this recommendation is the need for increased use of essay questions on examinations. Essay questions require both more writing and increased practice of reasoning and critical thinking.

7. The importance of role models cannot be overstressed. Parents and teachers alike should communicate, especially through the example of their own behavior, that reading and writing have a place in all our lives and that reading and writing well is pleasurable and has practical advantages.

8. Although facility with numbers and arithmetic operations is essential, computation should be taught as something more than mechanical processes. Algebraic reasoning can and should be introduced early and taught concurrently with arithmetic. The process should begin at the elementary level using a natural, logical progression from concrete problems and the use of numbers to abstract reasoning and the use of symbols.

9. Increased emphasis should be placed on the understanding and solution of word problems, emphasizing the principle that practical problems can be translated into mathematical symbols and, conversely, mathematical expressions can be translated into words.

10. Colleges, at least for the present, should not assume that the completion of a course or sequence of courses in high school signifies proficiency. Students' readiness for more advanced work should be verified by using a variety of evaluation techniques.

INTRODUCTION

The New Jersey College Basic Skills Placement Test (NJCBSPT) is a proficiency examination designed to measure the basic skills of students entering college. "Basic Skills" refers to those skills of thought and communication that an individual needs not only in order to take advantage of the opportunities offered by a college education but also to become a fully participating member of our society. These are not minimal "coping skills" or "life skills" which are considered essential to survival in a contemporary society (e.g., balancing a checkbook, reading a prescription label, filling out a job application). Rather the "basic skills" of reading, writing, and mathematics are essential for thinking, learning, and reasoning. They are fundamental building blocks which underlie all learning.

In 1977, the Basic Skills Council, in a report to the Board of Higher Education, defined and clarified what it meant by "basic skills." We repeat that definition for comparability and comprehension:

> By 'basic skills' the Council means the tools of intellectual discourse used in common by participating members of all academic communities. These tools are the language of words and the language of mathematics. Students need these tools to extract information, to exercise and develop the critical faculties of the mind, and to express thoughts clearly and coherently. Without them learning is impaired, communication is imprecise, understanding is impossible. A test of 'basic skills,' therefore, is a test to determine whether an individual has developed the practical working skills of verbal and mathematical literacy needed to take advantage of the learning opportunities that colleges provide.
>
> To define 'basic skills' in this way is not to deny the validity of other modes of communication--within the artistic realm of discourse, for instance, the languages of music, motion, image, color, light, and texture express a universe of perceptions, feelings, and emotions which cannot be expressed adequately by words and numbers and logic alone. Nor is the Council's definition of the 'basic skills' inimical to the value of diversity. We are, to the contrary, exceedingly sensitive to the differences between colleges: differences in their students, differences in their curricula and pedagogical philosophies, differences in their missions. But in one respect all colleges are identical: their ultimate purpose is to foster learning. The Council asserts unequivocally that the 'basic skills' of reading, writing, and mathematics are a prerequisite to learning at the college level. If the possession of these skills is 'standardization,' we believe that standardization in this sense is good.

The NJCBSPT consists of an essay and four multiple choice sections: Reading Comprehension, Sentence Sense, Computation and Elementary Algebra. (See Appendix A for a more detailed description of the NJCBSPT.) The test is required of all freshmen, full and part-time, entering New Jersey public colleges. In addition, ten independent colleges in the state voluntarily administer the NJCBSPT to their entering freshmen.

In order to ensure the security of the test, a new form is developed each year. Each form is equated statistically to the previous forms and the scores are reported in standard score format so as to preserve comparability from year to year. (See Appendix B for data on means and standard deviations for various groups.)

The NJCBSPT was developed by the Basic Skills Council and was first administered to freshmen entering college in the Fall of 1978. Since then, more than a quarter million students have taken the exam. Studies performed at both the state level and at local colleges have confirmed that the New Jersey College Basic Skills Placement Test is both reliable and valid. (Information on NJCBSPT publications and reports can be found in Appendix C.) The test does, in fact, measure those skills that students entering college should have. Indeed, the level of skills in reading, writing, and mathematics required by the NJCBSPT is appropriate for all "non-classified" students graduating from high school.

RESULTS

Statewide Results

Statewide, 51,135 students took the NJCBSPT during the spring and summer of 1982. The results of this year's testing confirm what has been found in each of the previous four years of the testing program: sizeable numbers of students come to our colleges lacking basic skills proficiency* at least in some areas of reading, writing, computation, and elementary algebra. (See Figures 1-3.)

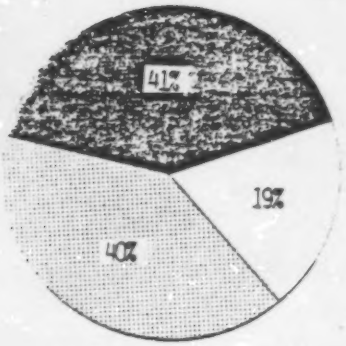
Among the students entering all of the public colleges and 10 of the independent colleges in New Jersey in the Fall of 1982:

31% lacked proficiency in verbal skills;
46% lacked proficiency in computation;
61% lacked proficiency in elementary algebra.

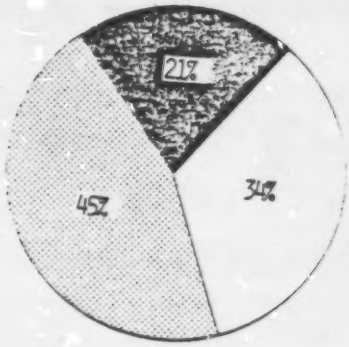
*See Appendix D for a description of the proficiency levels defined by the Basic Skills Council.

FIGURE 1
COMPARISON OF THE PERCENTAGE OF STUDENTS IN THREE LEVELS
OF PROFICIENCY CATEGORIES
FALL, 1982

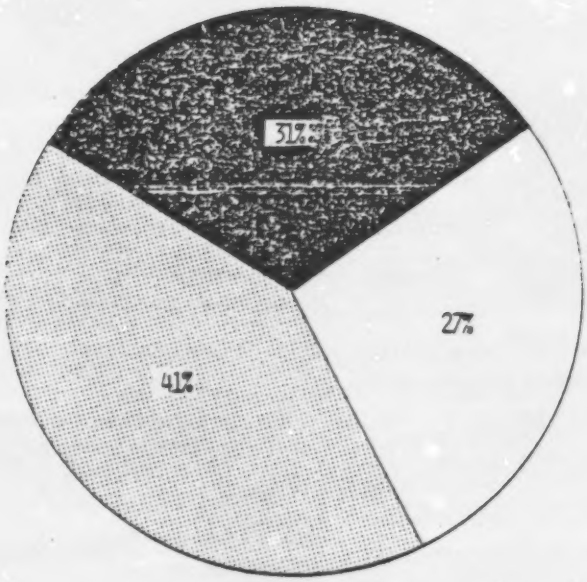
VERBAL



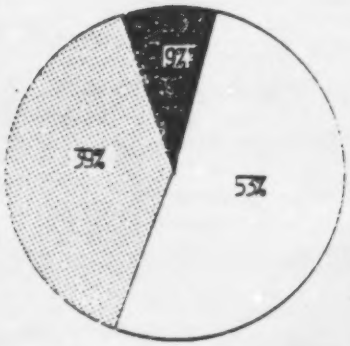
COUNTY COLLEGES



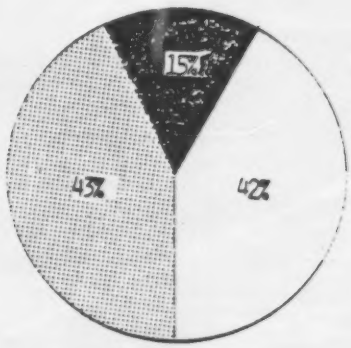
STATE COLLEGES



STATEWIDE



RUTGERS



NJIT

Lack Proficiency

Lack Proficiency In Some Areas

Appear to be Proficient

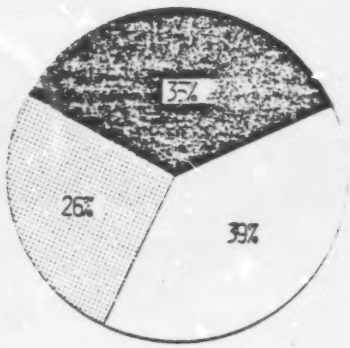
FIGURE 2

COMPARISON OF THE PERCENTAGE OF STUDENTS IN THREE LEVELS OF PROFICIENCY CATEGORIES

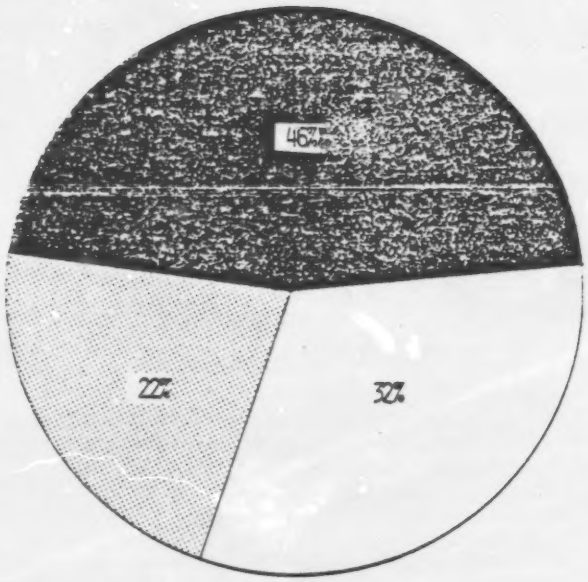
FALL, 1982

COMPUTATION

COUNTY COLLEGES



STATE COLLEGES



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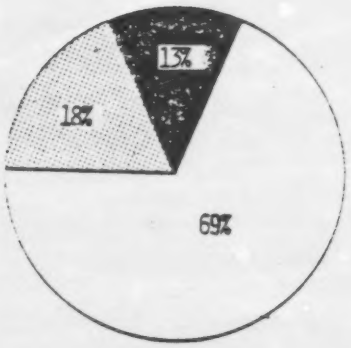
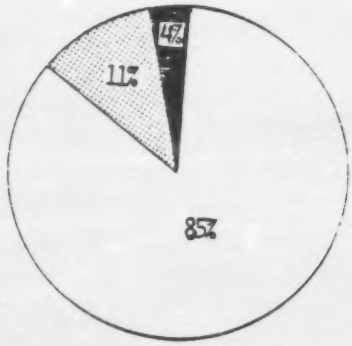


RUTGERS

Lack Proficiency

Lack Proficiency In Some Areas

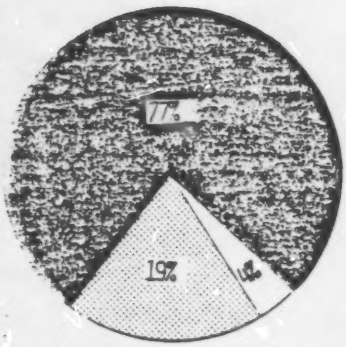
Appear to be Proficient



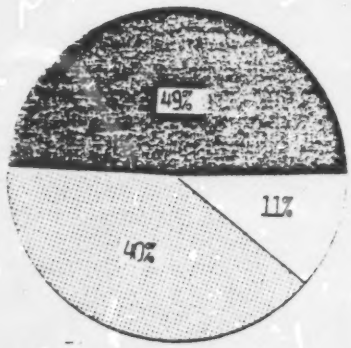
NJIT

FIGURE 3
COMPARISON OF THE PERCENTAGE OF STUDENTS IN THREE LEVELS
OF PROFICIENCY CATEGORIES
FALL, 1982

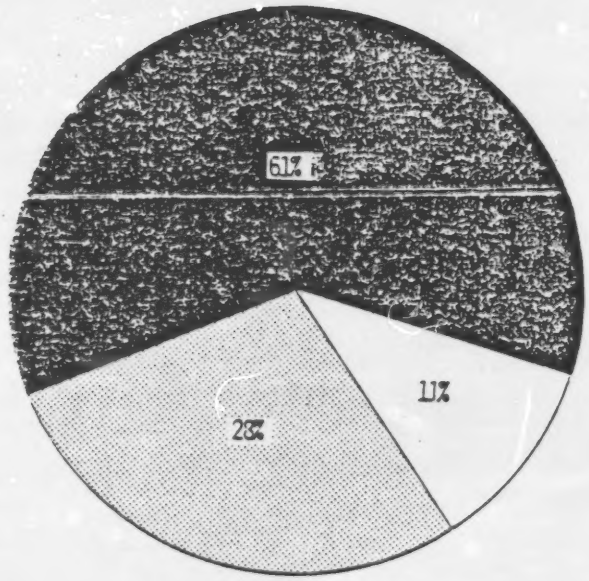
ELEMENTARY ALGEBRA



COUNTY COLLEGES



STATE COLLEGES



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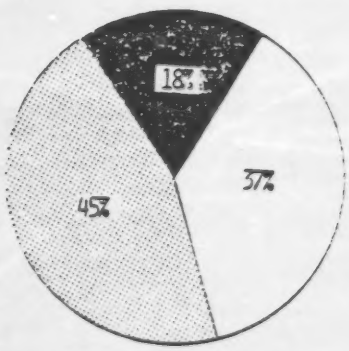
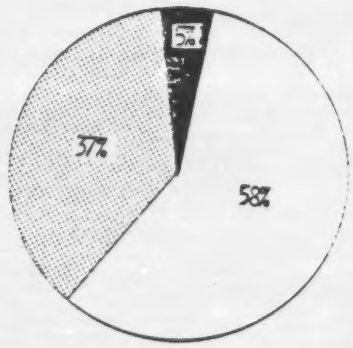


RUTGERS



NJIT

Lack Proficiency
Lack Proficiency In Some Areas
Appear to be Proficient

In addition,

41% lacked proficiency in some areas of verbal skills;
22% lacked proficiency in some areas of computation; and
28% lacked proficiency in some areas of elementary algebra.

Tables 1-5 present statewide and sector comparisons of proficiencies in verbal skills, computation, and elementary algebra from 1978 to 1982. There has been no meaningful change in the proficiency level of entering students over the five years of the testing program.

TABLE 1

Comparison of Statewide Test Results[1]
1978 - 1982

	1978		1979		1980		1981		1982	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	12,905	30	15,051	32	14,846	31	16,045	32	15,828	31
Lack Proficiency in Some Areas	19,865	46	20,311	43	19,388	40	20,190	41	20,900	41
Appear to be Proficient	10,214	24	12,135	25	13,439	28	13,416	27	13,740	27
COMPUTATION										
Lack Proficiency[2]	17,529	41	22,185	47	21,678	43	22,100	44	23,291	46
Lack Proficiency in Some Areas	10,730	25	11,178	23	11,695	24	12,665	25	11,259	22
Appear to be Proficient	14,673	34	14,362	30	14,578	30	15,068	30	16,585	32
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	25,779	60	29,114	61	29,630	62	30,979	62	31,220	61
Lack Proficiency in Some Areas	13,331	31	13,265	28	13,172	27	13,494	27	14,395	28
Appear to be Proficient	3,872	9	5,129	11	5,129	11	5,360	11	5,520	11

TABLE 2

Comparison of Sector Test Results[1]
County Colleges
1978 - 1982

	1978		1979		1980		1981		1982	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	9,148	39	11,237	41	11,442	41	12,666	42	12,455	41
Lack Proficiency in Some Areas	10,556	45	11,336	42	11,416	40	11,891	40	12,183	40
Appear to be Proficient	3,688	16	4,657	17	5,365	19	5,359	18	5,634	19
COMPUTATION										
Lack Proficiency[2]	12,466	53	16,222	60	16,414	58	16,795	56	17,523	58
Lack Proficiency in Some Areas	5,719	24	5,972	22	6,706	24	7,368	25	6,472	21
Appear to be Proficient	5,207	22	5,036	18	5,344	19	5,907	20	6,385	21
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	17,937	77	21,206	78	22,331	78	23,451	78	23,321	77
Lack Proficiency in Some Areas	4,714	20	5,018	18	5,136	18	5,430	18	5,807	19
Appear to be Proficient	741	3	1,006	4	997	4	1,172	4	1,252	4

[1]See Appendix B for a description of proficiency categories.

[2]Includes these students not attempting this portion of the test.

TABLE 3

Comparison of Sector Test Results[1]
State Colleges
1978 - 1982

	1978		1979		1980		1981		1982	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	2,559	24	2,718	24	2,318	22	2,232	22	2,342	21
Lack Proficiency in Some Areas	5,386	50	5,427	47	4,693	44	4,660	45	5,060	45
Appear to be Proficient	2,891	27	3,342	29	3,638	34	3,434	33	3,823	34
COMPUTATION										
Lack Proficiency[2]	3,592	33	4,286	37	3,673	34	3,454	33	3,948	35
Lack Proficiency in Some Areas	3,219	30	3,417	30	3,130	29	3,190	31	2,961	26
Appear to be Proficient	4,025	37	3,781	33	3,858	36	3,694	36	4,419	39
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	5,584	52	5,811	51	5,249	49	5,160	50	5,535	49
Lack Proficiency in Some Areas	4,384	40	4,510	39	4,311	40	4,126	40	4,573	40
Appear to be Proficient	868	8	1,166	10	1,108	10	1,052	10	1,220	11

TABLE 4

Comparison of Sector Test Results[1]
Rutgers
1978 - 1982

	1978		1979		1980		1981		1982	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	878	12	973	13	666	11	617	9	528	9
Lack Proficiency in Some Areas	3,202	44	3,014	39	2,101	34	2,275	35	2,401	39
Appear to be Proficient	3,242	44	3,713	48	3,461	56	3,661	56	3,279	53
COMPUTATION										
Lack Proficiency[2]	1,054	14	1,246	16	834	13	991	15	787	13
Lack Proficiency in Some Areas	1,566	21	1,579	21	1,267	20	1,356	21	1,125	18
Appear to be Proficient	4,702	64	4,875	63	4,136	66	4,212	64	4,307	69
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	1,715	23	1,622	21	1,203	19	1,260	19	1,109	18
Lack Proficiency in Some Areas	3,659	50	3,294	43	2,633	42	2,797	43	2,782	45
Appear to be Proficient	1,984	27	2,784	36	2,401	38	2,502	38	2,328	37

TABLE 5

Comparison of Sector Test Results[1]
NJIT
1978 - 1982

	1978		1979		1980		1981		1982	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	148	21	120	18	111	16	94	14	109	15
Lack Proficiency in Some Areas	321	47	285	44	271	40	289	42	313	43
Appear to be Proficient	221	32	245	38	302	44	298	44	300	42
COMPUTATION										
Lack Proficiency	21	3	30	5	21	3	34	5	32	4
Lack Proficiency in Some Areas	100	14	83	13	81	12	86	13	79	11
Appear to be Proficient	569	82	537	83	585	85	559	82	611	85
ELEMENTARY ALGEBRA										
Lack Proficiency	36	5	21	3	24	3	21	3	33	5
Lack Proficiency in Some Areas	375	54	278	43	279	41	273	40	270	37
Appear to be Proficient	279	40	351	54	384	56	385	57	419	58

[1]See Appendix D for a description of proficiency categories.

[2]Includes those students not attempting this portion of the test.

Recent High School Graduates

Among the students who entered college in New Jersey in the Fall of 1982 and took the NJCBSPT, 63% were recent high school graduates who received their diplomas in 1982. Figure 4 depicts the percentage of recent graduates statewide in each level of proficiency. (Table 6 presents statewide comparisons of basic skills proficiencies of recent high school graduates for the past five years, 1978-1982.) The results indicate that sizeable numbers of recent high school graduates also lack proficiency in the basic skills. Further, there has been no meaningful change in the proficiency level of this group over the past five years.

Among the recent high school graduates who entered the public colleges and 10 independent institutions in the Fall of 1982:

26% lacked proficiency in verbal skills;
39% lacked proficiency in computation; and
50% lacked proficiency in elementary algebra.

In addition,

45% lacked proficiency in some areas of verbal skills;
23% lacked proficiency in some areas of computation; and
36% lacked proficiency in some areas of elementary algebra.

TABLE 6

Comparison of Statewide Results[1]
for
Recent High School Graduates[2]

1978 - 1982

	1978		1979		1980		1981		1982	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency[3]	7,866	27	7,970	27	7,694	26	8,569	28	8,066	26
Lack Proficiency in Some Areas	12,681	44	12,847	43	12,837	44	13,251	44	14,038	45
Appear to be Proficient	8,253	29	9,033	30	8,724	30	8,668	28	9,004	29
COMPUTATION										
Lack Proficiency[3]	9,915	34	11,793	39	9,255	32	11,589	38	12,398	39
Lack Proficiency in Some Areas	7,396	26	7,477	25	6,654	23	8,210	27	7,500	23
Appear to be Proficient	11,333	39	10,673	36	8,922	36	10,741	35	12,066	38
ELEMENTARY ALGEBRA										
Lack Proficiency[3]	14,453	50	14,304	49	13,260	49	15,396	50	16,031	50
Lack Proficiency in Some Areas	10,184	35	10,520	35	9,027	36	10,662	35	11,411	36
Appear to be Proficient	4,209	15	4,619	15	3,544	14	4,482	15	4,522	14

[1]See Appendix D for a description of proficiency categories.

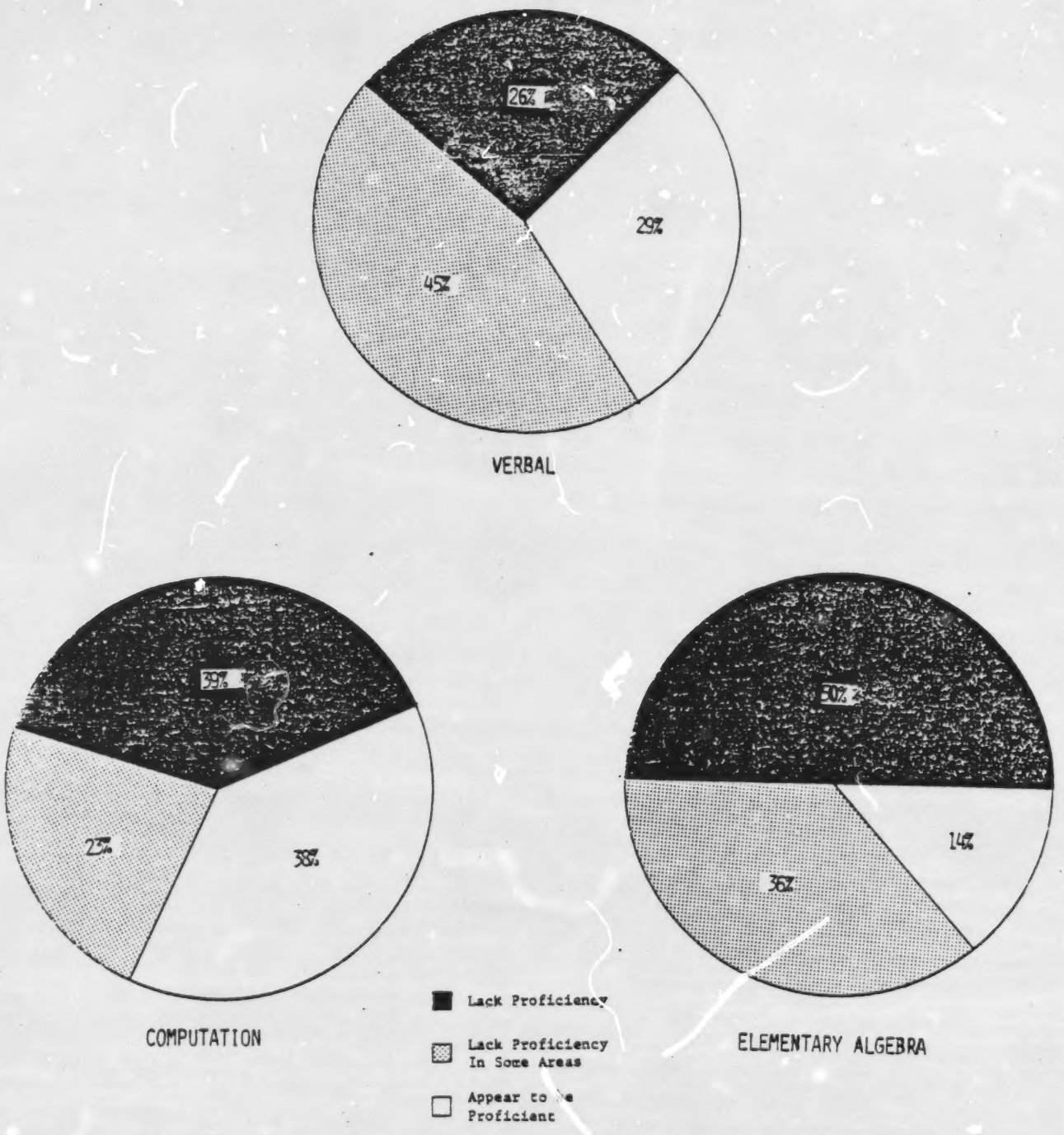
[2]For each year, the most recent high school graduates are those who graduated the Spring prior to their enrollment in college.

[3]Includes those students not attempting this portion of the test.

FIGURE 4

COMPARISON OF THE PERCENTAGE OF RECENT HIGH SCHOOL GRADUATES IN THREE LEVELS OF PROFICIENCY CATEGORIES

FALL, 1982



High School Mathematics Courses

The relationship between mathematics courses completed in high school and the mathematics proficiencies of the students tested has been thoroughly analyzed this year for the first time.* In performing this analysis, only recent high school graduates were examined. In addition, those graduating from high schools outside New Jersey were excluded. Finally, those students who indicated that English was not their best language were also excluded from the analysis. These results are included in Table 7.

The data indicate that completion of mathematics courses in high schools often does not result in proficiency in mathematics.

TABLE 7

Relationship Between Mathematics Courses Completed in High School and the Mathematics Proficiency of the Students Tested[1]

1982 New Jersey High School Graduates

COURSE CATEGORY	ELEMENTARY ALGEBRA								COMPUTATION							
	TOTAL NUMBER	Lack Proficiency 0-14		Lack Proficiency in Some Areas 15-25		Appear to be Proficient 26-30			TOTAL NUMBER	Lack Proficiency 0-19		Lack Proficiency in Some Areas 20-26		Appear to be Proficient 27-30		
		No.	%	No.	%	No.	%			No.	%	No.	%	No.	%	
1. Business Math or General Math	2,039 (817)*	2,018	99.0	20	1.0	1	0.05		2,039 (2)*	1,777	87.2	208	10.2	54	2.7	
2. Algebra I	1,904 (244)*	1,798	94.3	107	5.6	1	0.05		1,904 (3)*	1,423	74.7	334	17.6	147	7.7	
3. Algebra I & 2	1,133 (44)*	817	70.7	328	28.4	10	0.9		1,133 (1)*	702	60.8	301	26.1	152	13.2	
4. Algebra I & Geometry	3,128 (209)*	2,797	89.4	321	10.3	10	0.3		3,128 (8)*	1,970	63.0	790	25.3	368	11.8	
5. Algebra I, Geometry, Algebra 2	6,898 (107)*	3,435	50.1	3,211	46.6	232	3.4		6,898 (12)*	2,481	36.0	2,261	32.8	2	31.6	
6. Trigonometry (no Sr. Academic)	4,237 (22)*	848	20.0	1,325	39.6	864	20.4		4,237 (6)*	607	14.3	1,060	25.0	2	7	
7. Sr. Academic (no Trig.)	1,093 (2)*	214	20.3	625	59.4	214	20.3		1,093 (1)*	153	14.5	290	27.5	510	47.9	
8. Trigonometry & Sr. Academic	1,326 (3)*	115	8.7	731	55.1	480	36.2		1,326 (1)*	92	6.9	226	17.0	1,008	76.0	
9. Calculus (no Sr. Academic)	1,899 (2)*	65	3.4	650	34.2	1184	62.4		1,399 (2)*	55	2.9	205	10.8	1,639	86.3	
10. Sr. Academic & Calculus	555 (2)*	17	3.1	155	27.9	383	69.0		555 (1)*	16	2.9	48	8.7	491	88.5	
Overall	24,196 (1,453)*	12,144	50.2	8,673	35.8	3,379	14.0		24,196 (37)*	9,276	38.3	5,725	23.7	9 195	38.0	

*Non-takers (included in the total number)

[1]See Appendix D for a description of proficiency categories.

*See Appendix E for sample items typical of those included on the Mathematics Sections of the NJCBSPT.

Table 7 divides the 24,196 recent (1982) high school graduates according to the levels of mathematics courses these students reported having taken while in high school. The table further divides these students according to their performance on both the elementary algebra and computation sections of the NJCBSPT.

The following two examples are presented to aid in understanding the data included in Table 7.

1. Course category #1.

Among the 1982 recent high school graduates who took the NJCBSPT, 1,906 took Algebra I or elementary algebra (and no higher level mathematics) while in high school. Among this group 94% (N=1,798) lacked proficiency in elementary algebra; i.e., they scored between 0 and 14 on the elementary algebra section of the NJCBSPT. The remaining students in this group were either lacking proficiency in some areas (N= 107 or 5.6%) or appeared to be proficient (N=1 or .05%).

Among this same group of 1,906 Algebra I takers, 74.7% lacked proficiency in computation, while 17.6% were lacking in some areas, and 7.7% appeared to be proficient in computation (sixth grade arithmetic).

2. Course category #5.

There were 6,898 students in this category. These were students who took the traditional college preparatory program of Algebra I, Geometry, and Algebra II in high school. Of these students, 50% lacked proficiency, 47% were lacking in some areas, and 3.4% appeared to be proficient in elementary algebra. In addition, 36% lacked proficiency in computation, 33% lacked proficiency in some areas and 31% appeared to be proficient.

Appendix K provides similar information for 1980 and 1981. There has been no improvement over this time period.

Further analysis of the data in Table 7 indicates that high school students who take trigonometry, calculus, and senior math tend to perform significantly better than students who take no course more advanced than intermediate algebra, although even here the completion of courses is not a guarantee of proficiency.

Background Information

Tables 8 to 18 provide information on such variables as the number of students tested by sex, academic status, high school program and rank, and types of courses taken in high school. Virtually all of these data were self-reported. The data in these tables lead to the following statements:

1. There was a 3% increase in the number of students tested in 1982 over 1981. This increase continues a trend that has been occurring since 1978. Most of the increase in 1982 occurred within the state college sector.

2. In 1982, 54% of the students tested across the state were females. This represents very little change in the ratio of females to males, except at NJIT where the number of females increased by 36%.

3. The percentage of part-time students tested increased slightly from 20% in 1981 to 21% in 1982. This is largely accounted for by an increase in the number of part-time students tested at the state colleges.

4. There was a small increase in the number of recent high school graduates tested in 1982, especially at the county colleges.

5. A slightly higher percentage of students tested in 1982 completed academic programs in high school. This increase was greatest for the county college sector.

6. The statewide mean high school rank-in-class of students tested in 1982 declined slightly as compared to 1981. Most of this small decrease is attributed to the community college sector. The mean rank-in-class of the NJIT and the state college students increased somewhat.

7. There was a small increase over 1981 in the number of students taking four years of both high school English and high school mathematics. However, there was virtually no change in the level of mathematics courses taken.

A summary of the descriptive data covering the entire population tested indicates that:

- 54% were female;
- 77% enrolled as full-time students;
- 63% were recent high school graduates;
- 61% completed an academic program in high school;
- 85% were in the upper three-fifths of their high school graduating class;
- 92% said English was their dominant language;
- 83% studied 4 years of high school English;
- 46% studied 4 years of high school Mathematics;
- 71% took elementary algebra in high school.

TABLE 8

Students Tested, Fall 1982, By Sex

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
TOTAL NUMBER TESTED	51,135		30,380		11,328		6,219		722	
Male	22,573	44	13,329	44	4,972	44	2,843	46	592	82
Female	27,834	54	16,637	55	6,294	56	3,206	52	117	16
No Response	728	1	414	1	62	—	170	3	13	2

TABLE 9

Students Tested, Fall 1982, By Enrollment Status

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Full-Time	39,552	77	21,283	70	9,597	85	5,687	91	701	97
Part-Time	10,472	21	8,513	28	1,585	14	309	5	4	1
No Response	1,111	2	584	2	146	1	223	4	17	2

TABLE 10

Students Tested, Fall 1982, By Year of High School Graduation

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
1983	336	1	302	1	21	—	8	—	0	—
1982	31,964	63	15,456	51	8,529	75	5,318	86	648	90
1981	3,965	8	2,802	9	806	7	201	3	23	3
Prior to 1981	11,907	23	9,555	32	1,709	15	432	7	31	4
Did Not Graduate	1,354	3	1,277	4	46	—	24	—	2	—
No Response	1,609	3	1,988	3	217	2	236	4	18	3

TABLE 11

Students Tested, Fall 1982, By High School Program

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Academic	31,113	61	14,683	48	8,514	75	5,395	87	628	87
General	9,367	18	7,084	23	1,573	14	382	6	53	7
Career	6,964	14	5,846	19	794	7	158	3	18	3
GED	1,801	4	1,560	5	189	2	38	1	2	—
Other	665	1	559	2	71	1	19	—	1	—
No Response	1,225	2	648	2	187	2	227	4	20	3

TABLE 12

Students Tested, Fall 1982, By High School Rank

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Highest Tenth	4,313	8	1,216	4	901	8	1,814	29	162	22
Second Tenth	6,918	14	2,782	9	1,822	16	1,734	28	216	30
Second Fifth	11,305	23	5,960	20	3,272	29	1,431	23	205	28
Middle Fifth	20,299	40	14,355	47	4,110	36	850	14	104	14
Fourth Fifth	4,134	8	3,234	11	636	6	81	1	12	2
Lowest Fifth	1,116	2	946	3	117	1	27	—	1	—
No Response	2,850	6	1,867	6	470	4	282	5	22	3

TABLE 13

Total Number of Years of English Studied in High School, Fall 1982

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
One	1,173	2	1,024	3	103	1	30	1	2	—
Two	2,113	4	1,826	6	195	2	62	1	10	1
Three	3,089	6	2,519	8	369	3	122	2	13	2
Four	42,346	81	23,528	77	10,295	91	5859	91	671	93
No Course	541	1	418	1	69	1	39	1	2	—
No Response	1,373	3	1,065	4	297	3	307	5	24	3

TABLE 14

Total Number of Years of Mathematics Studied in High School, Fall 1982

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
One	2,327	5	2,005	7	230	2	50	1	0	—
Two	8,167	16	6,392	21	1,342	12	199	3	4	1
Three	15,097	30	9,213	30	3,875	34	1,165	18	46	6
Four	23,247	46	11,275	37	5,571	49	4,502	72	650	90
No Course	669	1	553	2	63	1	36	1	3	—
No Response	1,628	3	942	3	247	2	265	4	19	3

TABLE 15

Mathematics Courses Taken in High School, Fall 1982 Students Tested

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%*	#	%*	#	%*	#	%*	#	%*
General Math	18,307	36	13,571	45	2,959	26	1,037	17	99	14
Business Math	8,636	17	6,506	21	1,413	13	363	6	29	4
Algebra 1	36,335	71	19,736	65	9,202	81	4,810	77	608	84
Algebra 2	27,933	55	12,433	41	7,818	69	5,276	85	658	91
Geometry	32,306	63	15,481	51	8,796	77	5,413	87	663	92
Trigonometry	13,032	26	4,326	14	3,309	29	3,954	64	537	77
Senior Academic	4,994	10	1,506	5	1,326	12	1,542	25	269	35
Calculus	4,056	8	952	3	763	7	1,851	30	283	39
No Response	1,373	3	752	3	211	2	240	4	19	3

*Percentages exceed 100 since students may take more than one math course in high school.

TABLE 16

Comparison of Background Data of Students Tested
Statewide
1978-1982
(By Percentages)

	1978	1979	1980	1981	1982
SEX					
Male	46	45	45	44	44
Female	54	54	52	55	54
ENROLLMENT STATUS					
Full-Time	85	81	79	78	77
Part-Time	13	18	18	20	21
HIGH SCHOOL PROGRAM					
Academic	N/A	63	58	60	61
General	N/A	19	19	19	18
Career	N/A	15	14	14	14
GED	N/A	N/A	4	4	4
Other	N/A	2	4	1	1
HIGH SCHOOL RANK					
Highest Fifth	N/A	24	22	23	22
Second Fifth	N/A	24	23	23	23
Middle Fifth	N/A	38	39	39	40
Fourth Fifth	N/A	7	7	7	8
Lowest Fifth	N/A	2	2	2	2
NO. OF YEARS OF HIGH SCHOOL ENGLISH					
One	2	2	2	2	2
Two	3	4	5	5	4
Three	7	8	8	8	6
Four	86	84	80	81	83
NO. OF YEARS OF HIGH SCHOOL MATH					
One	6	6	6	5	5
Two	20	20	19	18	16
Three	34	33	31	30	30
Four	39	39	39	42	46
MATH COURSES TAKEN IN HIGH SCHOOL					
General Math	N/A	32	37	37	36
Business Math	N/A	17	17	18	17
Algebra 1	N/A	75	72	72	71
Algebra 2	N/A	55	52	53	55
Geometry	N/A	65	63	63	63
Trigonometry	N/A	25	23	24	26
Senior Academic	N/A	N/A	9	10	10
Calculus	N/A	7	7	7	8

TABLE 17

Self-Reported Years of English Studied
In High School
By Mean Scaled Scores on the Verbal Tests,
1981 - 1982

Years Studied	Number		TOTAL ENGLISH [1]		Reading Comprehension		Essay		Composition [2]	
	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982
FOUR	40,500	41,881	166	165	165	164	7.0	7.1	166	166
THREE	3,918	3,051	159	159	159	158	6.0	6.1	159	160
TWO	2,296	2,092	155	155	157	157	5.5	5.7	157	157
ONE	1,139	1,156	151	151	150	150	4.0	4.9	152	152

[1] Total English is a composite score based on all reading and writing sections.

[2] Composition is a composite score based on Sentence Structure/Sense, and Essay.

TABLE 18

Self-Reported Years of Mathematics Studied
In High School
By Mean Scaled Scores on the Mathematics Tests,
Fall 1982

Years Studied	Number		Computation		Elementary Algebra	
	1981	1982	1981	1982	1981	1982
FOUR	20,784	21,387	168	168	172	171
THREE	13,052	13,452	164	164	164	164
TWO	9,083	6,125	160	160	157	158
ONE	2,644	1,357	157	157	155	156

Appendix A

Description of the New Jersey Basic Skills Placement Test

Reading and Writing Test

The test used this year is essentially the same as last year's test of reading and writing. The results of last year's testing were analyzed by the Reading and Writing Advisory Committee, by the professional staff of Educational Testing Service, and by the Basic Skills Council. After careful review, certain items were deleted and replaced with items that had been pre-tested and then subjected to item analysis to determine appropriateness. The present version of the test, in the opinion of all who worked on its development, assesses the proficiencies of entering college freshmen in the basic skills of reading and writing, and can help to determine whether individual students will profit from placement in courses designed to strengthen their skills. No attempt was made to test spoken language.

The reading and writing test is comprised of two multiple-choice sections and an essay. The first multiple-choice section contains fifty-seven items (seven of which are embedded for pre-test items and are not included in the students scores) consisting of short reading passages on which questions test students' ability to identify main ideas, to interpret ideas, to draw inferences, and to recognize relationships. The second multiple-choice section consists of forty items (five of which are pre-test items) which measure students' ability to write standard English sentences; this section also tests the ability to use coordination and subordination appropriately, and to place modifiers appropriately. The essay section of the test asks the students to write a twenty-minute essay on an assigned topic that has been selected from ten essay topics that were field-tested in colleges throughout the State. Each essay is read by at least two different readers who score holistically under controlled conditions in statewide essay reading sessions.

Mathematics Test

The mathematics portion of the test consists of a thirty-five item section on computation and a thirty-five item section on elementary algebra. (Each of these sections includes five embedded pre-test items which are not included in the students' scores.) These tests contain items from last year's test along with certain new items that were pre-tested in the previous year. The items were carefully analyzed by the Mathematics Advisory Committee, the professional staff of Educational Testing Service, and the Basic Skills Council. In the judgement of those who developed it, this test is well designed to assess proficiency in basic computational skills and elementary algebra of students entering college, and will clearly identify students who would need assistance in the basic skills of computation and elementary algebra.

Appendix B
1 of 6

NJCBSPT Mean Scaled Scores
Statewide
1978 - 1982

	1978	1979	1980	1981	1982
Number of Students Tested	42,984	47,725	47,951	49,833	51,135
MEAN SCALED SCORES:					
Reading Comprehension	165	165	164	163	163
(Standard Deviation)	(11.5)	(12.1)	(12.2)	(12.7)	(12.7)
Sentence Structure/Sense	164	165	164	164	165
(Standard Deviation)	(11.3)	(11.6)	(11.6)	(11.9)	(11.5)
Essay	7.1*	7.0*	7.2	6.7	6.9
(Standard Deviation)	N/A	N/A	(2.1)	(2.0)	(2.0)
*1978 AND 1979 ESSAY SCORES ARE ESTIMATES. SEE FOOTNOTE BELOW.					
Composition[1]	164	165	165	164	165
(Standard Deviation)	(11.3)	(11.5)	(11.3)	(11.5)	(10.9)
Total English[2]	164	165	165	164	164
(Standard Deviation)	(11.5)	(11.8)	(11.6)	(11.9)	(11.6)
Math Computation	164	165	164	164	165
(Standard Deviation)	(11.3)	(11.3)	(11.1)	(11.0)	(10.7)
Elementary Algebra	166	166	165	166	166
(Standard Deviation)	(11.0)	(12.1)	(12.2)	(12.4)	(11.7)

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, in the best judgement of the Reading and Writing Advisory Committee, the following rough comparisons are reasonable:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections

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NJCBSPT Mean Scaled Scores
County Colleges
1978 - 1982

	1978	1979	1980	1981	1982
Number of Students Tested	23,390	27,230	28,464	30,073	30,380
MEAN SCALED SCORES:					
Reading Comprehension	162	161	161	161	160
(Standard Deviation)	(12.3)	(13.0)	(12.9)	(13.3)	(13.3)
Sentence Structure/Sense	161	161	161	161	162
(Standard Deviation)	(11.7)	(12.0)	(12.1)	(12.3)	(11.9)
Essay	6.7*	6.6*	6.7	6.2	6.5
(Standard Deviation)	N/A	N/A	(2.1)	(2.0)	(2.0)
*1978 AND 1979 ESSAY SCORES ARE ESTIMATES. SEE FOOTNOTE BELOW.					
Composition[1]	161	161	162	161	162
(Standard Deviation)	(11.8)	(12.0)	(11.7)	(11.8)	(11.2)
Total English[2]	161	161	161	161	161
(Standard Deviation)	(12.0)	(12.4)	(12.1)	(12.3)	(12.0)
Math Computation	160	161	161	161	162
(Standard Deviation)	(11.5)	(11.3)	(11.1)	(11.0)	(10.6)
Elementary Algebra	161	161	161	161	162
(Standard Deviation)	(9.6)	(10.4)	(10.4)	(10.6)	(10.2)

*The Essay scale was changed in 1980 from an 8-point scale to a 12 point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, in the best judgement of the Reading and and Writing Advisory Committee, the following rough comparisons are reasonable:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

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NJCBSPT Mean Scaled Scores
State Colleges
1978 - 1982

	1978	1979	1980	1981	1982
Number of Students Tested	10,840	11,487	10,669	10,338	11,328
MEAN SCALED SCORES:					
Reading Comprehension	166	166	166	165	165
(Standard Deviation)	(10.2)	(10.2)	(10.3)	(11.1)	(11.3)
Sentence Structure/Sense	166	167	167	167	167
(Standard Deviation)	(10.0)	(9.8)	(9.7)	(10.0)	(9.9)
Essay	7.4*	7.3*	7.5	7.2	7.3
(Standard Deviation)	N/A	N/A	(1.8)	(1.8)	(1.8)
*1978 AND 1979 ESSAY SCORES ARE ESTIMATES. SEE FOOTNOTE BELOW.					
Composition[1]	166	167	168	167	167
(Standard Deviation)	(10.1)	(9.7)	(9.5)	(9.6)	(9.5)
Total English[2]	166	167	167	167	167
(Standard Deviation)	(10.2)	(9.8)	(9.7)	(10.0)	(10.0)
Math Computation	166	166	167	167	167
(Standard Deviation)	(9.8)	(9.8)	(9.5)	(9.6)	(9.4)
Elementary Algebra	167	167	167	168	168
(Standard Deviation)	(10.0)	(11.0)	(11.1)	(11.2)	(10.7)

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, in the best judgement of the Reading and and Writing Advisory Committee, the following rough comparisons are reasonable:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

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NJCBSPT Mean Scaled Scores
Rutgers
1978 - 1982

	1978	1979	1980	1981	1982
Number of Students Tested	7,322	7,700	6,237	6,559	6,219
MEAN SCALED SCORES:					
Reading Comprehension	170	170	170	170	170
(Standard Deviation)	(8.2)	(8.4)	(8.5)	(8.7)	(8.5)
Sentence Structure/Sense	170	171	171	171	171
(Standard Deviation)	(8.5)	(8.4)	(8.0)	(8.3)	(8.6)
Essay	8.2*	8.2*	8.3	7.9	7.8
(Standard Deviation)	N/A	N/A	(1.7)	(1.7)	(1.6)
*1978 AND 1979 ESSAY SCORES ARE ESTIMATES. SEE FOOTNOTE BELOW.					
Composition[1]	171	171	172	172	171
(Standard Deviation)	(8.1)	(8.4)	(7.9)	(8.2)	(7.6)
Total English[2]	171	171	172	172	171
(Standard Deviation)	(8.1)	(8.4)	(8.0)	(8.3)	(7.7)
Math Computation	171	172	172	172	173
(Standard Deviation)	(8.1)	(8.3)	(7.7)	(7.8)	(7.3)
Elementary Algebra	174	175	177	177	177
(Standard Deviation)	(10.1)	(10.8)	(10.8)	(10.9)	(9.7)

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, in the best judgement of the Reading and Writing Advisory Committee, the following rough comparisons are reasonable:

1980/81 Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79 Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite socre based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

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NJCBSPT Mean Scaled Scores
NJIT
1978 - 1982

	1978	1979	1980	1981	1982
Numbers of Students Tested	690	650	687	679	722
MEAN SCALED SCORES:					
Reading Comprehension	169	170	170	169	168
(Standard Deviation)	(8.6)	(8.8)	(8.7)	(10.1)	(10.2)
Sentence Structure/Sense	169	170	170	169	170
(Standard Deviation)	(8.8)	(8.4)	(8.3)	(9.0)	(9.0)
Essay	7.4*	7.4*	7.6	7.2	7.2
(Standard Deviation)	N/A	N/A	(1.8)	(1.7)	(1.7)
*1978 AND 1979 ESSAY SCORES ARE ESTIMATES. SEE FOOTNOTE BELOW.					
Composition[1]	168	169	170	169	168
(Standard Deviation)	(8.8)	(8.6)	(8.0)	(9.0)	(8.8)
Total English[2]	169	170	170	169	168
(Standard Deviation)	(8.7)	(8.6)	(8.1)	(9.3)	(9.2)
Math Computation	174	175	176	175	175
(Standard Deviation)	(4.9)	(4.9)	(4.2)	(5.0)	(5.1)
Elementary Algebra	179	181	182	182	182
(Standard Deviation)	(6.6)	(6.2)	(6.8)	(6.8)	(6.6)

*The Essay scale was changed in 1980 from an 8-point scale to a 12-point scale. Essay scores from 1978 and 1979 are estimates and cannot be directly compared to scores for the following years. However, in the best judgement of the Reading and Writing Advisory Committee, the following rough comparisons are reasonable:

1980/81	Scale	0	2	3-4	5-6	7	8-9	10-11	12
1978/79	Scale	0	2	3	4	5	6	7	8

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

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NJCBSPT Mean Scaled Score
Statewide Comparison of Recent High School Graduates*

	1978	1979	1980	1981	1982
No. of Recent High School Graduates	28,846	29,943	29,355	30,540	31,964
Percent of Total Test Takers	67%	63%	61%	61%	63%
TOTAL ENGLISH					
Number Completing Test	28,800	29,850	29,255	30,488	31,621
Not Attempted	46	93	100	52	46
Mean Score	165	166	166	165	165
Standard Deviation	10.4	10.6	10.5	10.8	10.3
MATH COMPUTATION					
Number Completing Test	28,758	29,788	29,222	30,415	31,856
Not Attempted	88	155	133	125	108
Mean Score	166	166	166	166	166
Standard Deviation	10.4	10.3	10.1	10.1	9.9
ELEMENTARY ALGEBRA					
Number Completing Test	27,831	28,223	27,496	28,499	29,754
Not Attempted	1,015	1,720	1,859	2,041	2,210
Mean Score	167	168	168	168	169
Standard Deviation	10.8	11.8	11.9	12.1	11.4

*For each year, the most recent high school graduates are those who graduated the Spring prior to their enrollment in college.

Appendix C

NJCBSPT Publications and Related Reports*

Interpreting Mathematics Scores on the New Jersey College Basic Skills Placement Test.

Interpreting Scores on the New Jersey College Basic Skills Placement Test.

NJCBSPT Results: Implications for Reading and Writing

Scoring the Essay

Report to the Board of Higher Education on the Results of the New Jersey College Basic Skills Placement Testing and Recommendations on Instruction and Curriculum Development, New Jersey Basic Skills Council, January 22, 1982.

Report to the Board of Higher Education on the Character and Effectiveness of Remedial Programs in New Jersey Public Colleges and Universities in Fall, 1981, New Jersey Basic Skills Council, November 19, 1982.

*Publications and reports are available from the Basic Skills Office, New Jersey Department of Higher Education, 225 W. State St., Trenton, NJ 08625

Appendix D

A DESCRIPTION OF THE PROFICIENCY LEVELS ESTABLISHED BY THE BASIC SKILLS COUNCIL

Based upon its understanding of the content and difficulty level of the test, and upon the recommendations of its advisory committees, the Council offers the following general propositions to assist in understanding the test results presented in this report.

Verbal Skills

For the purpose of this report, students who scored below 161 on Total English* were placed in the "Lack Proficiency" category. Those who fell in the 161-172 range on Total English were considered in the "Lack Proficiency in Some Areas" category while those students above 172 on Total English "Appear to be Proficient". A more precise understanding of an individual student's scores can be achieved by considering the following.

In the Council's judgement, all students with essay scores of 2, 3 or 4, and those students with an essay score of 5 or 6 but fewer than 80% correct on either of the two multiple-choice tests, are seriously deficient in their use of written language. An essay score of 2, 3, or 4 indicates pronounced weakness in writing: in these essays the message is not always clear, the idea is either not developed or not logical, and the conventions of written language are usually not observed. An essay score of 5 or 6, together with fewer than 80% correct on one or both of the multiple-choice tests, indicates a need for help in following the conventions of written language, and in developing and comprehending an idea in a coherent manner.

Many students exhibit a pattern of performance that must be reviewed more carefully, since they probably require some assistance in one or more areas according to the requirements and standards of the individual colleges. Students in this category either did not demonstrate proficiency in one or more areas, or exhibited a marked discrepancy among scores--for example, a high essay score and a low sentence sense score is a pattern that bears examination. Essay scores of 5, 6 or 7 together with multiple-choice scores above 80% are "average" in that the essays tend to lack depth and coherence and, despite the multiple-choice scores, the writing samples may exhibit flaws in structure and/or language conventions. An essay score of 7 combined with scores of less than 80% correct on one or both of the multiple-choice tests indicates at best a marginal performance. Essay scores of 8-12 and fewer than 80% correct on any one of the multiple-choice tests are discrepant patterns, since these essay scores indicate a range from above average to excellent, and the multiple-choice scores appear to contradict the essay scores.

*Total English is a composite score based on all three reading and writing sections

Students with essay scores of 8-12 and 80% correct on both multiple-choice tests seem to be proficient in the basic skills of reading and writing. The writers of these essays have control of both the language and the structures they are using: generally speaking, they can comprehend a relatively mature idea and develop it in standard English.

Computation

A scaled score of 164 or below (19 or fewer questions correct out of 30 on the 1982 test) indicates pronounced weaknesses in dealing with certain computational operations and in particular with problems involving percentages and decimals. Declining scores indicate progressively greater difficulty with operations involving fractions. Students scoring below 165 on the Computation test are included in the category: "Lack Proficiency".

The range of scaled scores from 165 to 172 (20 to 24 questions correct) indicates greater familiarity with elementary computation but still shows definite weaknesses. The particular weaknesses of an individual student can be identified only by examining individual item responses. Students falling in the range of 165 to 172 on the computation test fall in the category: "Lack Proficiency in Some Areas".

Students who achieve a scaled score of at least 173 (25 questions correct) seem to be proficient in the elementary computational skills measured by this test and fall in the "Appear to be Proficient" category.

Elementary Algebra

Students who achieve a scaled score of 166 or below (14 or fewer questions correct out of 30 on the 1982 test) definitely lack an understanding of elementary algebra. Such students may possess a smattering of knowledge but have difficulty with a wide variety of elementary operations, and are not able in general to perform sustained operations involving a succession of simple steps. Students in this category ("Lack Proficiency") probably need to restudy elementary algebra from the beginning.

The particular difficulties of students who score in the scale range from 167 to 182 (15 to 25 questions correct) vary. They have some misconceptions, have some trouble dealing with equations involving letters rather than numbers, and probably cannot handle sustained operations well. The type of assistance or course work such students may require will depend on each student's background and can be determined by careful examination of the particular patterns of item responses. Students scoring in the range of 167 to 182 on the Elementary Algebra are included in the "Lack Proficiency in Some Areas" category.

Students who achieve a scaled score of 183 and above (26 or more questions correct) seem to have no widespread weaknesses in performing elementary algebraic operations and fall in the "Appear to be Proficient" category. They probably can do simple sustained operations. The test does not extend far enough in difficulty level to determine whether students scoring in this highest range are able to complete a complex succession of simple operations.

Appendix E

Items Typical of Those Included on the NJCBSPT, Mathematics Sections

COMPUTATION

Item

1. $\begin{array}{r} 8.35 \\ \times 4.7 \\ \hline \end{array}$
2. $\frac{2}{5} + \frac{1}{2} = ?$
3. $35.2 - 8.07 = ?$
4. If 6 pounds of cheese cost $8.04, how much will 4 pounds cost?
5. $\frac{7}{8} \div \frac{3}{5} = ?$
6. 30 percent of 200 = ?
7. $\frac{9}{20}$ expressed in decimal form is?
8. $\begin{array}{r} 7\frac{1}{8} \\ -3\frac{1}{5} \\ \hline \end{array}$
9. $0.6\overline{)360}$
10. If the price of a $0.60 pad of paper is increased by 15 percent, what is the new price?
11. $\frac{8}{\frac{1}{4}} = ?$
12. 20 is 8 percent of what number?

ELEMENTARY ALGEBRA

Item

1. $10a - 8b - 3a + 2b = ?$
2. $(3x + 1)(5x - 1) = ?$
3. If $7x - 3 = 2$, then $x = ?$
4. If $4x = 9 - 7x$, then $x = ?$
5. The value of $y = 3x^2 - 5x + 7$ when $x = -2$ is?
6. $(3a + 4)^2 = ?$
7. If $6(x - 2) + 5 = 2x$, then $x = ?$
8. A factor of $x^2 + 2x - 15$ is?
9. $\frac{b^8}{b^4} = ?$
10. If $\frac{3}{5}x - 2 = \frac{4}{3}$, then $x = ?$
11. In the solution of the system of equations below, what is x?

$$\begin{cases} 3x - y = 11 \\ 5x + 2y = 4 \end{cases}$$

12. If $ax = c - bx$, then $x = ?$

Appendix F

SAMPLE ESSAYS

This year students taking the New Jersey College Basic Skills Placement Test were asked to respond to the following essay topic:

> Young people often want the power and privileges of older people, whereas older people often feel that childhood and youth are the happiest times of life.
>
> Explain some of the advantages of being the age that you are now. Be specific.

Essays written in response to this topic by students entering to New Jersey colleges are reproduced as Essays A, B, C, D, E, and F. They have been typed, but the students' errors have been retained.

Each essay was scored by two readers on a scale of 1 to 6, with 6 the highest score. The reported score for the essay is the sum of the two readers' scores; the highest reported essay score is 12, indicating that each reader awarded the paper a 6.

In scoring the papers, readers (New Jersey college and secondary school faculty members trained in essay scoring) take into account all aspects of writing, from spelling and punctuation to organization, logic, and the appropriateness of the examples used. They are aware, however, that the student has only twenty minutes in which to respond to the topic; that some errors may be caused by haste; and that the essays are, in essence, unpolished first drafts.

The first five essays reproduced below (A-E) do not represent either the best or the worst of the essays scored. Rather, they represent the work of writers in the middle range: essays receiving reported scores of 8, 7, and 6. Of the total essays scored, only 18 percent were judged to be superior in quality to essays A and B (both of these received a score of 8). Essays C, D, and E received scores of 6 or 7.

Essays F and G (reported scores of 11 and 3, respectively) are included to show the range of writing in the students' responses to this topic. Again, these essays are neither the best nor the worst of the responses received. They are, however, clear demonstrations of competent writing (Essay F) and incompetent writing (Essay G). A total of 3,069 students (6%) wrote essays judged to be equal to or inferior in quality to Essay G.

Essays A and B (Reported essay score of 8)

Each of these essays has obvious flaws, but they both show that the writers have some sense of organization, some command of basic sentence structure, and some ability to communicate their ideas with clarity and effectiveness.

Essay A

> Young people often want to be treated like an adult with the same privileges that an adult has. But being an eighteen year old young person/adult has quite a few problems and disadvantages.
>
> First of all, an eighteen year old person has the problem of how the family will see them at that age. For instance, some parents feel that just because a person is eighteen years old they shouldn't feel that they are so grown, they can do what they want. On the other hand, other parents may feel that when the eighteenth year comes, the person should know what he wants to do and to go do it.
>
> Secondly, the state puts certain eighteen year olds down by saying that some are adults and they may drink. While other states say an eighteen year old is too young and won't become an adult until he or she is twenty-one.
>
> Last of all, it depends on the eighteen year old and how mature he or she acts. For instance one eighteen year old may have had a hard life and know a lot about life, but then society feels they are too young to get adult privileges which is quite unfair.
>
> To sum it up, being an eighteen year old person/adult involves a lot of set backs and hardships.

The one outstanding virtue of Essay A is its organization: a topic sentence, three clearly enumerated statements in support of that statement, and a conclusion. The many flaws in the essay (some run-on sentences, some failures in the use of pronouns, some indications of a limited vocabulary and a definite inability to write sentences that state ideas with precision) do not override the value of that simple, effective organizational scheme.

Essay B

I feel, that at the age of 18, that I am trapped between two different worlds. I always enjoyed myself during high school, but couldn't wait to share the privileges of being an adult.

When people would say, "that these are the happiest times of your life," I would frown, and think, "Sure, they're just saying that, but they're the ones getting everything they want out of life."

But now, I really understand what they meant. Before, we were secure in highschool, with a set pattern to follow. Now, it's all up to us to make a good life for ourselves.

This thought frightens me. There are so many decisions and plans to be made in what seems like such a small amount of time. And it wasn't until after Graduation that it dawned on me, that I have to start really thinking about the future to organize my life.

I know too, that life holds many experiences and opportunities for those who wish to conquer them. I hope I can make my life a happy one filled with many good experiences.

Essay B begins with a statement of the topic that will be addressed in the essay and continues to address that topic until the conclusion of the essay. The essay shows a definite writing style and an attempt to interest an audience. The flaws in the essay (the problems in punctuation are the most obvious) are not sufficient to place this paper in a lower score category.

Essays C, D, and E (Reported essay scores of 6 or 7)

These essays do not show the maturity and variety of sentence structure, the logic and full development of ideas, or the clarity and exactness of statement that are ordinarily expected to appear in the writing of college students. It is worth noting that none of these writers have severe problems with either spelling or punctuation.

Essay C

I feel that the age I am now is an ideal age for young and old. I am at the age where I am able to get materials things like a car, a good job, and still have time to learn enjoy life the way I know I can and that is to the fullest extent.

I still have time to learn things like swimming, controlling my temper, how to deal with people in order to get things done with cooperation. I am at the age where many young people are not such as having driving privileges, going to adult clubs and having patience, and at the same time I am at the age that older people can't enjoy, such as being able to read, write, being able to accept new ideas and comprehending them.

The sentences in Essay C are faulty; ideas that seem to have little relationship to each other are tied together. For example, the fourth sentence begins "I am at the age," connects "such as having driving privileges" to that phrase, and then equates "having patience" with "having driving privileges" and "going to adult clubs" as if they all specified the same category of activity.

The writer seems to have only one English sentence pattern to follow. There are only four sentences in the essay, and each begins with "I" followed by a verb.

Essay D

> Some of the advantages of being the age that I am now is the fact that I am still young and can still break away from the social norms of the day, if I wanted to. When one is young he has to do his own thing, be his own person, he has to see his future, be his future, and make his future or he will go nowhere. Another advantage of youth is the idea of a long life ahead of you. One does not have to think of dying when he is young, the young person thinks of living.
>
> Some disadvantages to youth are the hold which the older generation has on you. One is at a point, such as myself, where parents want to hold on, and being the last child has parents worried that they are growing old. Another disadvantage of youth which is totally wrong and unfair is the fact that society has you pinned as a delinquent before you have a chance to save yourself. Police constantly harass the young person, why, because he is young. Not all young people are scitzofrenic as some people believe. If those people would take a moment and look back, they would see that they were probably the same.

This essay is made up of two paragraphs, each of which discusses a single idea. However, no attempt has been made to use a topic sentence to unite the two paragraphs into a single composition. The essay is at times verbose ("Another disadvantage of youth which is totally wrong and unfair..."); the use of pronouns throughout the essay is inconsistent. Although the pattern of sentence structure is varied, the sentences themselves are not as clear or as structurally sound as they should be. The second sentence of each paragraph exemplifies examples of such flawed sentences.

Essay E

> I am a 34 year old woman that has many disadvantages. My college Education should have started at least 14 years ago. Now I have to compete with teenagers that has just graduated from High School and which probably have received a better Education through new and inproved methods of learning.
>
> Another disadvantage is job finding. Most Employers seek Recent High School grads.

> Being a mother I asumed many more responsibilities, such as cooking, cleaning, laundering, shopping for groceries, planning balanced nutritional food for myself and loved ones, ect. After years of doing the same old chores I often wish I was younger so that I could start my life and Future plans over and not make the same mistakes that I made in my youth.
>
> Education would be number 1 and Everything else would have to wait like "partying" and boys. I'm not saying that my childhood and youth were the happiest times of life for me, I'm just saying that I could do without the power, privileges and responsibilies.

The final sentence of the essay is so well done the the reader is tempted to ignore the many flaws the essay has. Ideas are not developed, and there is no overall organizational pattern. Some of the sentences are not as clear, or as well structured as they should be (for example, "another disadvantage is job finding.")

Essays F and G (Reported Essay Scores of 11 and 3)

Essay F is included to show that some students in New Jersey are indeed extremely competent writers; Essay G is included to show that the writing of some New Jersey college students is clearly incompetent.

Essay F (Score of 11)

> The endless pursuit of days gone by seems to be the most popular pastime in our society today. To be beautiful is to look youthful and healthy and everyone strives to fit this image. Advertising plays on this desire by promoting products designed to help give a younger, and therefore more aesthetically pleasing, appearance. Everything from facial cremes to rid aging people of wrinkles to tonics that miraculously whisk grey hairs away. What is so enticing about youth that causes grown men and women to try and be children again?
>
> Everything! Youth is the dawning of life and a time for endless energy and effervescence, no aches and pains to stand in the way of free physical and mental activity. Youth is potential energy beginning to be released. The age I am now is terrific. I am young enough to still be stimulated by new thoughts and ideas. Not yet set in my ways. I am open to positive suggestion, helping me to grow and change. All my options are open and I can choose what I want to do and where I want to go. Beginning college starts my independence. I must learn to take responsibility for my own actions. At this age I have the perfect balance of freedom and responsibility. I do not have the worries of those in the adult world, but unlike those younger than I, I must begin to take care of myself. It is this balance that makes youth the happiest time of life and causes adults to seek their long past days as a youngster.

The writer of Essay F has control of language and structure; the style lends the essay both interest and grace. Despite its flaws, Essay F is a pleasure to read: it is clear, felicitous, and fluent.

Essay G (Score of 3)

I feel being that age that I, am made life a little better because I can do more and be in charge of thing like had a car, house, job. Know how to take of my life. Went you ar upon 20yr life seem to be very hard because other people seem like they are coming down you and went do some that wrong every body said I told not to do that. But they do not explain why so that why some young people had a hard time upon 20. One thing I love about be older is have thing your way because you made thing the way you want them to be. Life is very short & sweet but you must do all you can to made it work. Went a person upon 20 and some time over 20. We do not care about some thing in life like going all the way thruw school. But went you get up in age some thing happen that made your mind think in the right way and your life seem to be getting better. And befor you know it is to late get what you should had had went you have the time to get. I think we a people get old to fast and you run out time befor some people head get rigth. But getting back to the que about me. Being upon 20 was hard. And being over 20 is hard. But is better over 20 for me. I do nor know about being 30 because I am not. So I answer that at 30. I know the que was not on what age people feel better.

Essay G contains so many flaws that it becomes almost incomprehensible. The writer has produced one idea after another and written them all down - without bothering to connect them in any way. Clearly, the writer needs help in communicating ideas in writing.

APPENDIX G

Comparison of the Number of Students in Three Levels of Proficiency Categories by Sector, Fall 1982[1]

	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	15,828	31	12,455	41	2,342	21	528	9	109	15
Lack Proficiency in Some Areas	20,900	41	12,183	40	5,060	45	2,401	39	313	43
Appear to be Proficient	13,740	27	5,634	19	3,823	34	3,279	53	300	42
COMPUTATION										
Lack Proficiency[2]	23,291	46	17,523	58	3,948	35	787	13	32	4
Lack Proficiency in Some Areas	11,259	22	6,472	21	2,961	26	1,125	18	79	11
Appear to be Proficient	16,585	32	6,385	21	4,419	39	4,307	69	611	85
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	31,220	61	23,321	77	5,535	49	1,109	18	33	5
Lack Proficiency in Some Areas	14,395	28	5,807	19	4,573	40	2,782	45	270	37
Appear to be Proficient	5,520	11	1,252	4	1,220	11	2,328	37	419	58

[1]See Appendix D for a description of proficiency categories.

[2]Includes those students not attempting this portion of the test.

APPENDIX H

Comparison of NJCBSPT Mean Scaled Scores
By Sector
Fall 1982

	Statewide	County Colleges	State Colleges	Rutgers	NJIT
Number of Students Tested	51,135	30,380	11,328	6,219	722
MEAN SCALED SCORES:					
Reading Comprehension	163	160	165	170	168
(Standard Deviation)	(12.7)	(13.3)	(11.3)	(8.5)	(10.2)
Sentence Sense	165	162	167	171	170
(Standard Deviation)	(11.5)	(11.9)	(9.9)	(8.6)	(9.0)
Essay	6.9	6.5	7.3	7.8	7.2
(Standard Deviation)	(2.0)	(2.0)	(1.8)	(1.6)	(1.7)
Composition[1]	165	162	167	171	168
(Standard Deviation)	(10.9)	(11.2)	(9.5)	(7.6)	(8.8)
Total English[2]	164	161	167	171	168
(Standard Deviation)	(11.6)	(12.0)	(10.0)	(7.7)	(9.2)
Math Computation	165	162	167	173	175
(Standard Deviation)	(10.7)	(10.6)	(9.4)	(7.3)	(5.1)
Elementary Algebra	166	162	168	177	182
(Standard Deviation)	(11.7)	(10.2)	(10.7)	(9.7)	(6.6)

[1]Composition is a composite score based on Sentence Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

APPENDIX I

Self-Reported Student Background Information
By Sector, Fall 1982

	County Colleges		State Colleges		Rutgers University		NJIT		STATE TOTAL	
	#	%	#	%	#	%	#	%	#	%
Consider themselves above average in written expression	13,192	43	6,604	58	4,127	66	457	63	25,789	50
Consider themselves average in written expression	14,165	47	4,112	36	1,650	27	224	31	21,004	41
Consider themselves below average in written expression	1,639	5	288	3	141	2	17	2	2,135	4
Want help to improve writing	5,955	20	2,272	20	1,659	27	187	26	10,621	21
Want help to improve reading	3,473	11	1,142	10	762	12	111	15	5,766	11
Want help to improve study habits	9,406	31	3,364	30	1,652	27	237	33	15,435	30
Consider themselves above average in mathematical ability	10,433	34	5,926	47	4,178	67	627	87	21,648	42
Consider themselves average in mathematical ability	14,817	49	4,773	42	1,525	25	65	9	22,206	43
Consider themselves below average in mathematical ability	3,680	12	879	8	218	4	7	1	4,987	10
Want help to improve mathematics	10,424	34	3,299	29	1,613	26	161	22	16,249	32

APPENDIX J

Comparison of Statewide
Self-Reported Student Background Information
1978 - 1982

	1978		1979		1980		1981		1982	
	#	%	#	%	#	%	#	%	#	%
Consider themselves above average in written expression	20,483	48	23,514	49	23,444	49	25,225	51	25,789	50
Consider themselves average in written expression	19,152	44	20,688	43	20,395	43	20,699	42	21,004	41
Consider themselves below average in written expression	2,593	6	2,379	5	2,236	5	2,105	4	2,135	4
Want help to improve writing	N/A	*	11,244	24	10,561	22	10,678	21	10,621	21
Want help to improve reading	N/A	*	7,085	15	6,372	13	6,084	12	5,766	11
Want help to improve study habits	N/A	*	15,637	33	15,624	33	15,968	32	15,435	30
Consider themselves above average in mathematical ability	16,601	39	19,380	41	19,491	41	20,989	42	21,648	42
Consider themselves average in mathematical ability	19,400	45	21,399	45	21,097	44	21,701	44	22,206	43
Consider themselves below average in mathematical ability	6,155	14	5,965	13	5,319	11	5,180	10	4,987	10
Want help to improve mathematics	N/A	*	17,490	37	15,705	33	16,127	32	16,249	32

*Data Not Available for 1978.

Appendix K
(1 of 2)

Relationship Between Mathematics Courses Completed in High School and the Mathematics Proficiency of Students Tested in 1980

Recent New Jersey High School Graduates Only**

COURSE CATEGORY	Elementary Algebra							Computation						
	TOTAL NUMBER	Lack Proficiency 0-14		Lack Proficiency in Some Areas 15-25		Appear to be Proficient 26-30		TOTAL NUMBER	Lack Proficiency 0-20		Lack Proficiency in Some Areas 21-25		Appear to be Proficient 26-30	
		No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
1. Business Math or General Math	1,633 (577)*	1,613	98.8	19	1.2	1	0.6	1,633 (3)*	1,403	85.9	198	12.1	32	2.0
2. Algebra 1	1,681 (164)*	1,583	94.2	98	5.8	0	0.0	1,681 (2)*	1,218	72.5	358	21.3	105	6.3
3. Algebra 1 & 2	987 (28)*	687	69.6	285	28.9	15	1.5	987 (0)*	556	56.3	293	29.7	138	14.0
4. Algebra 1 & Geometry	3,355 (101)*	2,939	87.6	410	12.2	6	0.2	3,355 (15)*	1,960	58.4	1,014	30.2	381	11.4
5. Algebra 1, Geometry, Algebra 2	6,724 (44)*	2,998	44.6	3,408	50.7	318	4.7	6,724 (18)*	2,148	32.0	2,504	37.2	2,072	30.8
6. Trigonometry (no Sr. Academic)	3,755 (21)*	587	15.6	2,248	59.9	920	24.5	3,755 (13)*	434	11.6	955	25.4	2,366	63.0
7. Sr. Academic (no Trig.)	914 (1)*	144	15.8	527	57.7	243	26.6	914 (1)*	82	9.0	254	27.8	578	63.2
8. Trigonometry & Sr. Academic	1,215 (1)*	82	6.8	621	51.1	512	42.1	1,215 (0)*	63	5.2	235	19.3	917	75.5
9. Calculus (no Sr. Academic)	1,331 (0)*	37	2.8	426	32.0	868	65.2	1,331 (0)*	41	3.1	136	10.2	1,154	86.7
10. Sr. Academic & Calculus	404 (3)*	15	3.7	92	22.8	297	73.5	404 (1)*	9	2.2	34	8.4	361	89.4
Overall	21,999 (940)*	10,685	48.6	8,134	37.0	3,180	14.5	21,999 (53)*	7,914	36.0	5,981	27.2	8,104	36.8

*Non-takers (included in the total number)

[1]See Appendix D for a description of proficiency categories.

** Recent high school graduates are those who graduated the Spring prior to their enrollment in college.

Appendix K
(2 of 2)

Relationship Between Mathematics Courses Completed in High School and the Mathematics Proficiency of Students Tested in 1981

Recent New Jersey High School Graduates Only**

COURSE CATEGORY	Elementary Algebra								Computation							
	TOTAL NUMBER	Lack Proficiency		Lack Proficiency in Some Areas		Appear to be Proficient			TOTAL NUMBER	Lack Proficiency		Lack Proficiency in Some Areas		Appear to be Proficient		
		0-14		15-25		26-30				0-20		21-25		26-30		
		No.	%	No.	%	No.	%			No.	%	No.	%	No.	%	
1. Business Math or General Math	2,001 (700)*	1,977	98.8	24	1.2	0	0.0		2,001 (2)*	1,729	86.4	224	11.2	48	2.4	
2. Algebra I	1,757 (171)*	1,675	95.3	81	6.6	1	0.1		1,757 (0)*	1,289	73.4	363	20.7	105	6.0	
3. Algebra I & 2	1,052 (58)*	733	69.7	307	29.2	12	1.1		1,052 (4)*	626	59.5	290	27.6	136	12.9	
4. Algebra I & Geometry	3,389 (172)*	3,026	89.3	356	10.5	7	0.2		3,389 (5)*	2,128	62.8	917	27.1	344	10.2	
5. Algebra I, Geometry, Algebra 2	6,684 (95)*	3,117	46.6	3,310	49.5	257	3.8		6,684 (30)*	2,384	35.7	2,502	37.4	1,798	26.9	
6. Trigonometry (no Sr. Academic)	3,921 (37)*	710	18.1	2,340	59.7	871	22.2		3,921 (18)*	584	14.9	1,177	30.0	2,160	55.1	
7. Sr. Academic (no Trig.)	1,006 (2)*	176	17.5	569	56.6	261	25.9		1,006 (2)*	149	14.8	331	32.9	526	52.3	
8. Trigonometry & Sr. Academic	1,373 (6)*	107	7.8	688	50.1	578	42.1		1,373 (5)*	84	6.1	287	20.9	1,002	73.0	
9. Calculus (no Sr. Academic)	1,624 (2)*	47	2.9	495	30.5	1,082	66.6		1,624 (3)*	56	3.4	228	14.0	1,340	82.5	
10. Sr. Academic & Calculus	581 (1)*	9	1.6	148	25.5	424	73.0		581 (1)*	13	2.2	76	13.1	492	84.7	
Overall	23,388 (1,244)*	11,577	49.5	8,318	35.6	3,493	14.9		23,388 (70)*	9,042	38.7	6,395	27.3	7,951	34.0	

*Non-takers (included in the total number)

†See Appendix D for a description of proficiency categories.

** Recent high school graduates are those who graduated the Spring prior to their enrollment in college.

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